Maine DEP Chapter 691 (Underground Tank Regulations) Regulatory Tables

The following tables summarize the regulatory requirements relevant to annual inspections for underground storage tanks contained in Chapter 691 of the Maine DEP regulations. The tables provide a concise summary of present day requirements as well as a brief chronology of the history of specific requirements since the first rules went into effect in 186. The purpose of these tables is to present a "plain language" version of the underground storage system regulatory requirements. The initial goal was to provide applicants for the underground storage tank inspector exam a means to avoid detailed study of the complex regulations themselves. However, the tables also provide tank owners and operators as well as other interested parties with a summary of the evolution of the underground storage tank regulations.

While every attempt has been made to ensure the accuracy of these tables, the regulations themselves are the final word in determining regulatory requirements.

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Tank Leak Detection – Motor Fuel or Marketing and Distribution Facility

Present Day Requirements:

All motor fuel or marketing and distribution tanks installed on or after 9/16/91 must use secondary containment with continuous monitoring.

Most motor fuel or marketing and distribution tanks installed before 9/16/91 use one of the following leak detection methods or combination of methods:

- Daily inventory control that is reconciled monthly plus an annual statistical inventory analysis (SIA).
- Automatic tank gauging that conducts a .1 gph test at least once a month. NOTE: If used with pressurized piping, this method must include an electronic line leak detector that can conduct a .1 gph test on the piping at least once a month.

NOTE: Facilities installed after 8/1/2002 on moderate yield aquifers may have additional leak detection requirements.

The following methods are allowed by the rules for motor fuel or marketing and distribution tanks installed before 9/16/91 but are rarely used. These methods require daily inventory control that is reconciled monthly plus an annual SIA plus:

- weekly manual monitoring of secondary containment.
- an automatic tank gauge that conducts a .2 gph leak test at least once per month
- continuous or weekly manual monitoring of groundwater wells.
- continuous soil vapor monitoring.

Regulatory History:

1986	1991	1996	2002	2004
Inventory plus SIA for all facilities (691, 5B, 1986). Facilities in sensitive areas must also have secondary containment or groundwater or soil vapor monitoring (691, 5A4, 1986)	Secondary containment for all new tanks (691, 5B2, 1991). Existing tanks may use inventory plus SIA plus secondary containment (5D13), groundwater, soil vapor, or ATG (.2gph) (691, 5C2, 1996).	Same as 1991, except that .2 gph ATG is discontinued and replaced with .1 gph ATG + ELLD (691, 5C2, 1996)	Same as 1996 (691, 5C2, 2002). Prohibition of new facilities on significant sand and gravel aquifers (691, 3-A, 2002)	Same as 2002 (691, 5C2, 2004).

Tank Leak Detection – Heating Oil for Consumptive Use Facility

Present Day Requirements:

All heating oil consumptive use tanks installed on or after 9/16/91 must use secondary containment with continuous monitoring. Leak detection probes are to be installed at the lowest point of each leak monitoring location.

Consumptive use heating oil tanks installed before 9/16/91 with greater than 1100 gallon capacity must use one of the following leak detection methods:

- Weekly manual sampling of ground water monitoring wells.
- Continuous monitoring of ground water or soil vapor wells or secondary containment.
- Monthly monitoring. The rule is vague here (691, 6C4, 2004), but acceptable options might include a monthly ATG test (.2 or .1 gph accuracy) or monthly manual inspection of secondary containment.

Consumptive use heating oil tanks installed before 9/16/91 with less than 1100 gallon capacity are not required to have any form of leak detection.

Regulatory History:

1986	1991	1996	2002	2004
Monitoring wells required for facilities of greater than 1100 gallons unless a double walled tank is installed (691, 6C5, 6C5(c), 1986)	Secondary containment for all new tanks (691, 6B2, 1991). Existing tanks may use continuous or weekly ground water monitoring, secondary containment, or other unspecified leak detection equipment (691, 6C, 1991)	Same as 1991 (691, 6C, 1996) except that monitoring interval for all but manual ground water monitoring is extended to monthly (691, 6C4, 1996)	Same as 1996 (691, 6C, 2002)	Added, positioning of leak detection probes (691, 6B(2), 6C, 2004)

Corrosion Protection – Motor Fuel or Marketing and Distribution Facility

Present Day Requirements:

All tanks must be fiberglass, cathodically protected steel or other approved material. Approved materials include double wall clad tanks (for example, ACT-100) and double wall jacketed tanks (for example, Total Containment, Tanx). Single wall clad tanks (for example, Buffhide) are required to have cathodic protection. When performing CP measurements on single wall tanks, a minimum of three readings must be taken over the center line of the tank.

All product piping in contact with soil or water must be fiberglass, cathodically protected steel, or other approved material. Approved materials include flexible piping (for example, Total Containment, Environ, APT, etc.).

All steel vent lines in contact with soil must be cathodically protected.

Vertical, direct fill pipes made of Schedule 40 steel do not need cathodic protection if coated with a minimum of 1/8 inch of fiberglass resin, epoxy, or bitumastic coating.

Regulatory History:

1986	1991	1996	2002	2004
All new and replacement tanks and piping shall be FRP, CP steel or other approved material (691, 5A1(a), 1986). FRP clad steel tanks require additional CP (691, 5A1(a)(ii), 1986). By DEP policy dated 1/20/1987, CP of direct fill pipes is not required if the fill pipe is coated. This policy was formalized in the 1991 rule.	Same as 1986 (691, 5B1(a), 1991), except clad steel tanks need not have CP if double walled w/continuous monitoring (691, 5B1(a)(ii), 1991) and CP of fill pipes is not required if pipe is coated (691, 5B6(d), 1991)	Same as 1991 (691, 5B(1)(a), and 5B(1)(a)(ii), 1996)	Same as 1996 (691, 5B(1)(a) and 5B(1)(a)(ii), 2002)	Added, piping in contact with water as well as soil must be FRP, CP steel or other approved material (691,5B(1)(a) and 5B(1)(a)(ii). For single wall tanks a minimum of 3 readings must be taken over the center line. (691, Appendix A).

Corrosion Protection – Heating Oil for Consumptive Use Facility

Present Day Requirements:

All tanks must be fiberglass, cathodically protected steel or other approved material. Approved materials include double wall clad tanks (for example, ACT-100) and double wall jacketed tanks (for example, Total Containment, Tanx). Single wall clad tanks (for example, Buffhide) are required to have cathodic protection. When performing CP measurements on single wall tanks, a minimum of three readings must be taken over the center line of the tank.

All product piping in contact with soil or water must be fiberglass, cathodically protected steel, or other approved material. Approved materials include flexible piping (for example, Total Containment, Environ, APT, etc.). Copper supply and return lines that are sleeved in PVC or secondarily contained and not in contact with the soil or water do not need cathodic protection.

All steel vent lines in contact with soil must be cathodically protected.

Vertical, direct fill pipes made of Schedule 40 steel do not need cathodic protection if coated with a minimum of 1/8 inch of fiberglass resin, epoxy or bitumastic coating.

Regulatory History:

1986	1991	1996	2002	2004
All new and replacement tanks (691, 6B2, 1986) and piping (691, 6D2, 1986) shall be FRP, CP steel or other approved material. FRP clad steel tanks require additional CP (691, 6B(3), 1986). By DEP policy dated 1/20/1987, CP of direct fill pipes is not required if the fill pipe is coated. This policy was formalized in the 1996 rule.	Same as 1986 (691, 6B1(b), 1991) except clad steel tanks need not have CP if double walled w/continuous monitoring (691, 6B1(b)(ii), 1991)	Same as 1991 (691, 6B(1)(b) and 6B(1)(b)(ii), 1996), except CP of vertical fill pipes is not required (691, 6B(6)(b)(vi), 1996)	Same as 1996 (691, 6B(1)(b) and 6B(1)(b)(ii), 1996)	Added, piping in contact with water as well as soil must be FRP, CP steel, or other approved material. (691, 6B(1)(b) and 6B(1)(b)(ii), 1996) For single wall tanks a minimum of 3 readings must be taken over the center line. (691, Appendix A).

Overfill Prevention – Motor Fuel or Marketing and Distribution Facility

Present Day Requirements:

All motor fuel or marketing and distribution tanks must have an overfill prevention device (drop tube shutoff, alarm, or ball float) installed and capable of being inspected.

Overfill devices installed before 12/24/1996 should be installed as follows:

- **Shutoff devices** should be set so that the product flow into the tank is stopped at 95% of the tank capacity.
- **Alarms** should be set so that they sound at 90% of the tank capacity. Vent whistles are not considered a high level alarm when installed on motor fuel tanks.
- **Float vent valves** should be set so that the ball seals the vent when the product level reaches 90% of the tank capacity.

Overfill devices installed on or after 12/24/1996 can be installed according to the levels above OR as follows:

- **Shutoff devices** can be set at as high a level as permitted by the manufacturer, as long as the device reaches a positive shutoff condition before the product level in the tank reaches the fittings at the top of the tank.
- **Alarms** can be set so that they trigger one minute before the tank is overfilled. To set the alarm properly, you must know the delivery rate of product into the tank.
- **Float vent valves** can be set so that the ball seals the vent at a point that is 30 minutes prior to overfilling the tank. To use this set point, you must know the amount of compression in the tank ullage produced by the delivery, and the rate of air flow through the float vent valve breather hole.

Float vent valves may not be installed on tanks with suction pumps or where deliveries are made by pumping the product into the tank at any time after 12/24/1996. Overfill devices that were installed before 12/24/96 but need to be replaced should be installed according to the regulations that went into effect on 12/24/1996.

Regulatory History:

1986	1991	1996	2002	2004
New and replacement facilities shall have 3 gallon capacity spill bucket OR overfill device (691, 5A3(e), 1986)	New and replacement facilities shall have 3 gallon capacity spill bucket AND overfill device (shutoff at 95%, restriction or alarm at 90%) (691, 5B3(b), 1991). Added retrofit requirement for existing tanks with date of 12/1/93 (691, 5C(3), 1991).	Same as 1991, but set points of overfill device now include restricting flow 30 minutes before overfill, alarm one minute before overfill, and shut off so tank top fittings not wet. Also added prohibition of float vent valves with suction pumps and pumped deliveries (691, 5B3(b), 1996). Changed date of retrofit requirement for existing tanks to 12/22/98 (691, 5C(3), 1996)	Same as 1996 (691, 5B3(b), 2002).	Added, vent whistles are not considered a high level alarm when installed on motor fuel tanks. (691, 5B3(b), 2004)

Overfill Prevention – Heating Oil for Consumptive Use Facility

Present Day Requirements:

All heating oil consumptive use tanks over 1100 gallons capacity and installed on or after 9/16/91 must have an overfill prevention device (drop tube shutoff, alarm, or ball float) installed and capable of being inspected.

Overfill devices should be installed as follows:

- **Shutoff devices** should be set so that the product flow into the tank is stopped at 95% of the tank capacity.
- **Alarms** should be set so that they sound at 90% of the tank capacity. Vent whistles should STOP sounding at 90% of the tank capacity.
- **Float vent valves** should be set so that the ball seals the vent when the product level reaches 90% of the tank capacity. Use of float vent valves is prohibited on a tank that will receive pressurized deliveries because of the danger of rupturing the tank or overfilling the fill pipe.

All consumptive use facilities installed before 9/16/91 that have one or more monitor wells installed around the tank must have EITHER a spill bucket OR some type of overfill device (drop tube shutoff, alarm, vent whistle) installed.

Regulatory History:

1986	1991	1996	2002	2004
Facility <u>with monitor well</u> must have spill bucket with capacity of 3 gallons or more OR automatic shutoff device or other device approved by the DEP which will prevent overfills. (691, 6C(6), 1986)	Facility over 1100 gal capacity must have spill bucket with 3 gal capacity AND overfill device (shutoff at 95%, restriction or alarm, 90%) (691, 6B3(b), 1991). Added annual test of operation (691, 6C(6), 1991).	Same as 1991 (691, 6B3(b), 1996). Use of float vent valves with pumped deliveries is “discouraged.”	Same as 1991, 1996 (691, 6B3(b), 2002)	Added, use of float vent valves is prohibited on a tank that will receive pressurized deliveries. (691, 6B3(c), 2004).

Spill Catchment Basin (Spill Bucket) – Motor Fuel or Marketing and Distribution Facility

Present Day Requirements:

All new and replacement motor fuel or marketing and distribution facilities must have a liquid tight spill catchment basin with a minimum capacity of 15 gallons for each tank fill which is sealed around the fill pipe and will collect any spillage during product delivery.

Spill buckets must be kept clean of water and debris such that the bucket's full capacity is maintained and available to catch overfills.

When only the spill bucket is retrofitted or replaced, the largest capacity catchment basin feasible from 5 to 15 gallons must be installed.

Regulatory History:

1986	1991	1996	2002	2004
All new or replacement facilities must have spill bucket with capacity of 3 gallons or more OR automatic shutoff device or other device approved by the DEP which will prevent overfills. (691, 5A3(e)), 1986)	All new and replacement facilities will have 3 gallon spill bucket (691, 5B3(a), 1991). Added retrofit requirement for existing tanks with date of 12/1/93 (691, 5C(3), 1991).	All new and replacement facilities will have 3 gallon spill bucket (691, 5B(3)(a), 1996). Changed date of retrofit requirement for existing tanks to 12/22/98 (691, 5C(3), 1996). Added maintenance requirement to keep spill bucket clean (691, 5D(7)(b), 1996)	Same as 1996 (691, 5B(3)(a), 5D(7)(b), 2002)	All new and replacement facilities must have a 15 gallon spill bucket. When only the spill bucket is retrofitted or replaced, the largest capacity feasible from 5 to 15 gallons must be installed (691, 5B3(a), 5D7(b), 2004)

Spill Catchment Basin (Spill Bucket) – Heating Oil for Consumptive Use Facility

Present Day Requirements:

All heating oil consumptive use facilities over 1100 gallons capacity and installed on or after 9/16/91 must have a liquid tight spill catchment basin with a minimum capacity of 3 gallons for each tank fill which is sealed around the fill pipe and will collect any spillage during product delivery. All new and replacement heating oil consumptive use facilities with a capacity of over 1100 gallons installed after March 15, 2004 must have a liquid tight spill catchment basin with a minimum capacity of 15 gallons.

Spill buckets must be kept clean of water and debris such that the bucket's full capacity is maintained and available to catch overfills.

All consumptive use facilities installed before 9/16/91 that have one or more monitor wells installed around the tank must have EITHER a spill bucket OR some type of overfill device (drop tube shutoff, alarm, vent whistle) installed.

All consumptive use facilities installed before 9/16/91 that do NOT have monitor wells installed around the tank are not required to have a spill catchment basin installed.

Regulatory History:

1986	1991	1996	2002	2004
Facility with monitor well must have spill bucket with capacity of 3 gallons or more OR automatic shutoff device or other device approved by the DEP which will prevent overfills. (691, 6C(6), 1986)	All new and replacement facilities over 1100 gallons will have 3 gallon spill bucket (691, 6B3, 1991)	Same as 1991 (691, 6B(3), 1996). Added maintenance requirement to keep spill bucket clean (691, 6C(6) 1996)	Same as 1996 (691, 6B(3)(a), 2002)	All new and replacement facilities over 1100 gallons must have a minimum 15 gallon capacity spill bucket (691, 6B3(a), 2004)

Leak Detection for Pressurized Piping – Motor Fuel or Marketing and Distribution Facility

Present Day Requirements:

All pressurized product piping at motor fuel or marketing and distribution facilities installed on or after 9/16/91 must have continuously monitored secondary containment plus a line leak detector (LLD).

Pressurized product piping at marketing and distribution facilities installed before 9/16/91 may have EITHER an electronic LLD that conducts a .1gph test every month OR a mechanical line leak detector plus one of the following:

- An annual statistical inventory analysis (SIA).
- An annual piping tightness test.
- Secondary containment with continuous interstitial monitoring.

After March 14, 2004, liquid-tight sumps or pans of adequate dimensions with continuous monitoring must be installed under all new and replacement product dispensers. The dispenser sump must be liquid tight to a level at least 3 inches higher than the liquid level required to activate the sensor.

Regulatory History:

1986	1991	1996	2002	2004
New product piping must have line leak detector (691, Appendix E(6), 1986). No other leak detection requirements specific to piping.	New product piping must be secondarily contained (691, 5B2, 1991) plus have a line leak detector (691, Appendix E(7), 1991). Existing product piping to have line leak detector plus annual tightness test or secondary containment or continuous vapor monitoring. (691, 5C2(e) or 5C2(f), 1991). DEP considers SIA to be equivalent to a piping tightness test.	New product piping same as 1991 (691, 5B2, Appendix E(7), 1996). Existing product piping to have line leak detector plus .1 gph test conducted monthly (electronic LLD), or annual tightness test, or secondary containment, or continuous vapor monitoring. (691, 5C2(d), 5C2(e) or 5C2(f), 1996)	Same as 1996 (691, 5B2, Appendix E(7) and 5C2(d), 5C2(e) or 5C2(f), 2002)	New or replacement facilities must have liquid tight dispenser sumps or pans of adequate dimensions. (691, 5B3(c), 5B7(b)). Soil vapor monitoring is no longer a leak detection option (691, 5C2(f) and (g), 2004) Secondary containment must be used with continuous monitoring, 5C2(g)(i), 2004

Leak Detection for Suction Pumping Systems – Motor Fuel or Marketing and Distribution Facility

Present Day Requirements:

All suction piping installed on or after 4/5/1986 used for motor fuel or marketing and distribution facilities should have a single check valve located as close as possible to the pump. The piping can be single or double-walled and should slope uniformly back to the tank.

After March 14, 2004, liquid-tight sumps or pans of adequate dimensions with continuous monitoring must be installed under all new and replacement suction pumps. The suction pump sump must be liquid tight to a level at least 3 inches higher than the liquid level required to activate the sensor.

Regulatory History:

1986	1991	1996	2002	2004
For all new facilities, single check valve located as close to pump as possible (691, Appendix E(7), 1986). New facilities in sensitive areas also require secondary containment or groundwater or soil vapor monitoring (691, 5A4, 1986).	Same as 1986 for new product piping (691, Appendix E(9), 1991). Existing piping to have continuous vapor monitoring, secondary containment, or check valve under the pump (691, 5C2(e) or 5C2(f), 1991).	Same as 1991 for new product piping (691, Appendix E(9), 1996) Same as 1991 for existing piping (691, 5C2(f) or 5C2(g), 1996)	Same as 1991 for new product piping (691, Appendix E(9), 2002). Same as 1991 for existing piping (691, 5C2(f) or 5C2(g), 2002).	Same as 1991 for new product piping (691, Appendix E(9), 2004). Same as 1991 for existing piping (691, 5C2(f) or 5C2(g), 2004) New or replacement facilities must have liquid tight suction pump sumps or pans of adequate dimensions. (691, 5B3(c), 5B7(b)). Secondary containment must be used with continuous monitoring, 5C2(g)(i), 2004

Leak Detection for Piping Systems – Heating Oil for Consumptive Use Facility

Present Day Requirements:

All heating oil for consumptive use and emergency generator supply and return lines installed on or after 9/16/91 should be secondarily contained with continuous interstitial monitoring. PVC plastic may be used as secondary containment for #2 heating oil piping only.

Heating oil and emergency generator supply and return lines installed before 9/16/91 may have a check valve installed on the supply line. But for many installations this is not feasible, and the piping may have no piping specific leak detection method in place.

Regulatory History:

1986	1991	1996	2002	2004
For new facility, single check valve located as close to pump as possible (691, Appendix E(7), 1986).). No specific requirements for existing facility.	Secondary containment with continuous interstitial monitoring for new piping (691,6B2), 1991). PVC may be used to secondarily contain #2 heating oil (691, 6B6(b)(ii), 1991). No specific requirements for existing facility.	Same as 1991 (691, 6B2, 6B6(b)(ii), 1996) for product piping.	Same as 1991 (691, 6B2, 6B6(b)(ii), 2002)	Same as 1991 (691, 6B2, 6B6(b)(ii), 2004)

Leak Detection for Fill Piping – Motor Fuel or Marketing and Distribution Facility

Present Day Requirements:

For facilities installed on or after 4/5/1986 and before 9/16/1991, there are no specific leak detection requirements for fill piping in non-sensitive areas. In sensitive areas, new fill piping should be secondarily contained or have groundwater or soil vapor monitoring.

For facilities installed on or after 9/16/91, secondary containment of all fill pipes is required unless the fill pipe is uniformly coated with minimum 1/8 inch fiberglass resin, bitumastic or epoxy coating.

For facilities installed on or after 12/24/96, secondary containment of vertical, direct drop fill pipes is required unless the fill pipe is uniformly coated with minimum 1/8 inch fiberglass resin, bitumastic or epoxy coating.

For facilities installed on or after 12/24/96, secondary containment and continuous monitoring are required for offset (remote) fill pipes, regardless of the coating.

Regulatory History:

1986	1991	1996	2002	2004
No specific requirements for fill piping in non-sensitive areas. In sensitive areas, new fill piping should be secondarily contained or have groundwater or soil vapor monitoring (691, 5A4, 1986)	All fill pipes do not require secondary containment if properly coated (691, 5B(6)(d), 1991)	Direct fill pipes do not require secondary containment if properly coated. Offset fill pipes DO require secondary containment and monitoring.(691, 5B(6)(d), 1996)	Same as 1996 (691, 5B(6)(d), 2002)	Same as 2002 (691, 5B(6)(d), 2004)

Leak Detection for Fill Piping – Heating Oil for Consumptive Use Facility

Present Day Requirements:

For facilities installed on or after 4/5/1986 and before 9/16/1991, there are no specific leak detection requirements for fill piping.

For facilities installed on or after 9/16/91, secondary containment of vertical, direct drop fill pipes is required unless the fill pipe is uniformly coated with minimum 1/8 inch fiberglass resin, bitumastic or epoxy coating. Secondary containment and monitoring of offset (remote) fill pipes are required regardless of the coating.

Regulatory History:

1986	1991	1996	2002	2004
No specific requirements for leak detection of fill piping	New fill piping should be secondarily contained (691, 6B2, 1991). The DEP has never enforced the secondary containment requirement on direct fills	Direct fill pipes do not require secondary containment if properly coated. Offset fill pipes DO require secondary containment and monitoring.(691, 6B(6)(b)(vi), 1996)	Same as 1996 (691, 6B(6)(b)(vi), 2002).	Same as 2002 (691, 6B(6)(b)(vi), 2004).